

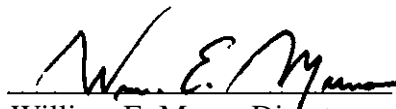
# **FIVE-YEAR REVIEW REPORT**

**Five-Year Review Report  
for  
Tomah Armory Site  
Tomah, Wisconsin**

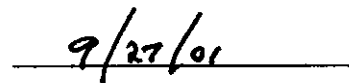
**September 2001**

**PREPARED BY:  
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9/27/01

**U.S. Environmental Protection Agency  
Region 5  
Five Year Review  
Tomah Armory  
Tomah, Wisconsin**

**I. Introduction**

The United States Environmental Protection Agency (U.S. EPA) Region 5 has conducted a five-year review of the remedial actions implemented at the Tomah Armory Superfund site in Tomah, Wisconsin. This review was conducted in August and September 2001. This report documents the results of the review. The purpose of five-year reviews is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of the review are documented in five-year reports. In addition, five-year review reports identify deficiencies found during the review, if any, and identify recommendations to address them.

This review is required by statute. U.S. EPA must implement five-year reviews consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA 121(c), as amended, states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented.

The NCP part 300.430(f)(4)(ii) of the Code of Federal Regulations (CFR) states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

This is the first five-year review for this site. The triggering action for this review is based on the Record of Decision (ROD) for this site signed in September, 1997. The ROD found that "No Action" was appropriate because contamination from the landfill posed no significant risk under current land use and the reasonably anticipated future land use at the site. In addition, since waste material will be left in place and because there is contaminated ground water under the landfill itself, U.S. EPA proposed groundwater monitoring to ensure that groundwater conditions at the site continue to pose no significant risk to human health and the environment. Due to the fact that hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure and groundwater monitoring

continues, this five-year review is required.

## **II. Site Chronology**

Table 1 lists the chronology of events for the Tomah Armory Site.

**Table 1: Chronology of Site Events**

<b>Date</b>	<b>Event</b>
1984	Initial Discovery of Problem
7/1987	NPL Listing
1994	Phase I RI/FS Complete
1997	Phase II RI/FS Complete
9/1997	“No Action” ROD Signature
5/1999, 11/1999, 5/2000	Groundwater Monitoring Events

## **III. Background**

### **A. Site History and Enforcement Actions**

The Armory Landfill was owned until 1968 by the City of Tomah. Landfilling occurred at the site from 1950 until sometime between 1955 and 1960. Waste disposal methods consisted of excavation of 6 to 8 feet of surface soil, disposal of waste material in the excavated area, placement of a cover consisting of previously excavated topsoil, and a final grading process. Some of the material disposed of in the landfill may have been burned before it was buried. No disposal records regarding the types (residential, commercial, or industrial) or quantities of material buried were maintained.

The Wisconsin Army National Guard (ARNG) purchased a portion of the site in July of 1968 to support Wisconsin ARNG activities associated with the administration, logistical support, and readiness of the unit. The remainder of the site is currently used for operation of the City of Tomah wastewater treatment plant, and the operation of a telephone museum.

Prior to the purchase of the property by the ARNG, a portion of the landfill was excavated and disposed off-site in order to construct some Armory buildings. Also, during 1997, an area west of Woodward Avenue was excavated and the excavated material was disposed off-site. An area of the museum property was also graded, covered, and reseeded.

Representatives of the Wisconsin Department of Natural Resources (WDNR) and the U.S. EPA’s

Field Investigation Team (FIT) investigated the site in 1984 to gain information for a preliminary assessment. A site inspection report was prepared, and the site was scored using the Hazard Ranking System (HRS). The site was placed on the National Priorities List (NPL) on July 21, 1987. The possible effects of disposal directly into an aquifer and the potential for direct contact with hazardous substances because of erosion of the landfill cap were the concerns raised during the preliminary assessment.

In January 1988, the Agency for Toxic Substances and Disease Registry (ATSDR) prepared a preliminary health assessment for the site. The assessment lists a number of potential exposure routes including ingestion and dermal contact with ground water, surface water, and soils and inhalation of contaminated dusts or volatile compounds. The assessment was completed before the collection of any samples at the site and thus recommended environmental characterization and sampling of the site to address the environmental and human health exposure pathways.

In July 1993, U.S. EPA, in cooperation with WDNR and the United States Geological Survey (USGS), conducted a Phase I remedial investigation (RI) at the Tomah Armory. The purpose of the Phase I RI was to collect ground water and soil samples to characterize the nature and extent of contamination and associated exposure risks. This characterization would provide a basis for deciding whether further action was necessary at the site. Results of the Phase I RI indicated that additional groundwater and soil sampling was needed to adequately characterize the site.

Research to identify parties responsible for conditions at the Tomah Armory was completed in December 1994. U.S. EPA named the City of Tomah and the Wisconsin Department of Military Affairs as potentially responsible parties (PRPs), based on their ownership and operation of the site. U.S. EPA sent a special notice letter to the PRPs in January 1995, requesting a “good faith” proposal to continue the Phase II remedial investigation/feasibility study (RI/FS). In February 1995, the City declined the offer to perform the response action. In March 1995 the Wisconsin Department of Military Affairs agreed to conduct the Phase II RI/FS. The Phase II RI/FS was completed in 1997. A “No Action” ROD was written for the site and signed in September of 1997. In addition, since waste material was left in place and because there is contaminated ground water under the landfill itself, U.S. EPA proposed groundwater monitoring to ensure that groundwater conditions at the site continue to pose no significant risk.

## **B. Site Characteristics**

The Tomah Armory is located in the northeastern section of the City of Tomah, Monroe County, Wisconsin. The site is bordered on the north by the City sewage disposal and treatment facility, to the east by Mill Street and a residential area, to the south by Arthur Street and a telephone museum, and to the west by Woodward Avenue which separates the site from open fields and an apartment complex to the west. Access to the site is not restricted.

The original landfilled area covered a significant portion of the area north of Arthur Street to the South Fork of the Lemonweir River in the vicinity of Mill Street and Woodward Avenue. It

covered the majority of what is now the Armory property, a portion of the City of Tomah sewage treatment plant property, a portion of a property on which a museum is located and finally a small area west of Woodward Avenue. The small area west of Woodward Avenue was excavated and the excavated material was disposed off-site in the early summer of 1997, for general maintenance purposes.

Ground water in the vicinity of the Tomah Armory is currently not used for drinking water purposes. Area residences are connected to municipal water services.

The Phase I and II RI involved sampling and analysis of ground water, air, subsurface soil, and surface soil to determine site conditions. Groundwater samples were collected from residential and monitoring wells around the site. Subsurface and surface soils were collected from within the landfilled area to determine if contamination is present, and from outside the landfilled area to determine background conditions. A geophysical investigation consisting of a magnetic survey and an electromagnetic survey was conducted to determine the approximate boundaries of the landfilled area.

Based on the results of the RI, U.S. EPA examined the threats to human health and the environment through exposure by ingestion and/or direct contact with contaminants in the subsurface and surface soils. Groundwater contamination found downgradient of the Tomah Armory was determined to be from a source upgradient to the Tomah Armory. For groundwater contamination found under the Tomah Armory, U.S. EPA does not believe the groundwater will be used as a drinking water source. The Tomah Armory property and the rest of the City of Tomah is currently served by a municipal water service. Given that the municipal system has adequate capacity for expansion, U.S. EPA believes that any potential future development on-site would use municipal water as well. In addition, since waste material will be left in place and because there is contaminated ground water under the landfill itself, U.S. EPA proposed groundwater monitoring to ensure the groundwater conditions at the site continue to pose no significant risk.

#### **IV. Remedial Actions**

U.S. EPA found that “No Action” was appropriate because contamination from the landfill poses no significant risk under the current land use and the reasonably anticipated future land use at the site. In addition, since waste material will be left in place and because there is contaminated ground water under the landfill itself, U.S. EPA proposed groundwater monitoring to ensure that groundwater conditions at the site continue to pose no significant risk.

#### **V. Five Year Review Process**

The Tomah Armory site five year review was prepared by Matt Mankowski, Remedial Project Manager for the U.S. EPA. Wendy Anderson and Bill Evans, of the Wisconsin Department of Natural Resources (WDNR) also assisted in the review. The five year review consisted of: a

review of relevant documents and a site visit. The completed report will be available in the information repository. Notice of its completion will be placed in the local newspaper and local contacts will be notified by letter.

## **VI. Five Year Review Findings**

### **A. Site Visit**

Since no remedial action was taken, conditions at the site were not affected. Personnel at the Armory were contacted and they confirmed that the site is un-changed and that restrictive covenants remain viable. Some seeding had occurred to enhance the grass cover in some areas.

### **B. Risk Information Review**

Contamination from the landfill poses no significant risk under the current land use and the reasonably anticipated future land use at the site. Protections against inappropriate land use are in place in the form of restrictive covenants (deed instruments), enforceable by the Wisconsin Department of Natural Resources. Because of the lack of significant risk the U.S. EPA has found that “No Action” is appropriate. In addition, since waste material will be left in place and because there is contaminated ground water under the landfill itself, U.S. EPA proposed groundwater monitoring to ensure that groundwater conditions at the site continue to pose no significant risk.

In light of our decision not to select a remedial action, the requirements of CERCLA section 121 - including the provisions concerning applicable or relevant and appropriate requirements - were not triggered. This section applies only in those cases where a remedial action is selected.

### **C. Data Review**

Results of the groundwater investigation indicated that the inorganic contaminants are found inside the boundaries of the landfill and the organic groundwater contamination is from a source upgradient from the Armory Landfill site. During the Phase I investigation, inorganic contaminants, most importantly lead, were detected inside the boundaries of the landfill at levels above the federal maximum contaminant level (MCL). Lead was also found in one location outside the boundary of the landfill at a concentration (15.3 µg/l) slightly above the MCL (15.0 µg/l). Phase II groundwater sampling performed outside the boundaries of the landfill did not detect lead in any wells above the MCL. Organic contaminants in ground water were found inside and outside the boundaries of the landfill. The Phase I sampling detected trichloroethene (TCE) inside the boundaries of the landfill and downgradient at concentrations above the MCL (5 µg/l). The Phase II sampling confirmed the presence of TCE and detected other organic contaminants outside the boundaries of the landfill. However, the Phase II sampling also detected these organic constituents in upgradient wells at greater concentrations. Follow-up to help determine potential sources for the organic contamination, confirmed the presence of a site

with leaking storage tanks upgradient to the Armory landfill. The State of Wisconsin is addressing the presence of contaminated groundwater at the upgradient site. The U.S. EPA concluded that the organic contamination was from a source other than the landfill and that ground water under the landfill would not be used as a drinking water source, since the area around the landfill site, together with the rest of the City of Tomah, is currently served by municipal water. Given that the municipal system has adequate capacity for expansion, U.S. EPA believes that future development on-site would use municipal water as well. Ground water at the site will be monitored because waste will be left in place and to ensure that groundwater conditions at the site continue to pose no significant risk. Results of the future groundwater monitoring will be evaluated after five years to determine the need to continue monitoring.

Groundwater monitoring was continued to ensure that groundwater conditions at the site continue to pose no significant risk. To date, results from three rounds of groundwater sampling taken in May 1999, November 1999, and May 2000 are available for review. Groundwater samples were collected from 3 monitoring wells and analyzed for dissolved lead. Dissolved lead was not detected above the laboratory limit of quantification in any of the groundwater samples collected.

## **VII. Assessment**

The following questions address the protection of human health and the environment by the remedy at the Tomah Armory site.

### **Question A: Is the remedy functioning as intended by the decision documents?**

- **Implementation of Institutional Controls and Other Measures:** Protections against inappropriate land use are in place in the form of restrictive covenants (deed instruments). Such covenants are enforceable by the Wisconsin Department of Natural Resources remain viable.
- **Remedial Action Performance:** This was a “No Action” ROD and so remedial action performance does not need to be evaluated.
- **System Operations/O&M:** Since there was no construction or remedy implemented at the site system operations/O&M does not exist. However, the property owner maintains the grass cover over the landfill by mowing and reseeding when necessary.
- **Cost of System Operations/O&M:** No cost is associated with O&M. Please see above.
- **Opportunities for Optimization:** The limited groundwater sampling activities do not lend themselves to optimization.

- **Early Indicators of Potential Remedy Failure:** No remedy was implemented so the potential for remedy failure was not assessed.

**Question B: Are the assumptions used at the time of remedy selection still valid?**

- **Changes in Standards and To Be Considered:** Neither federal MCLs nor State groundwater standards relevant to the site have changed since the time of the ROD.
- **Changes in Exposure Pathways:** Exposure pathways have not changed since the time of the ROD.
- **Changes in Toxicity and Other Contaminant Characteristics:** Toxicity and other factors for contaminants of concern have not changed.
- **Changes in Risk Assessment Methodologies:** Changes in risk assessment methodologies since the time of the ROD do not call into question the protectiveness of the remedy.

**Question C: Has any other information come to light that could call into question the protectiveness of the remedy?**

No new information has come to light since the signature of the ROD for this site.

## **VIII. Deficiencies**

No deficiencies were discovered during the five-year review or the site inspection.

## **IX. Recommendations and Follow-up Actions**

A final sampling event is scheduled for October 2001. If this sampling event indicates the dissolved lead is not present in groundwater in the vicinity of the Tomah Armory then the recommendation is that there is no need for additional groundwater monitoring. If this is the case, the site should be deleted from the NPL.

## **X. Protectiveness Statements**

U.S. EPA certifies that the remedy selected for this site remains protective of human health and the environment.



**XI. Next Review**

The next review will be conducted within five years of completion of this five-year review report. The completion date is the date of the signature shown on the signature cover attached to the front of this report.